Trend Study 17-12-02

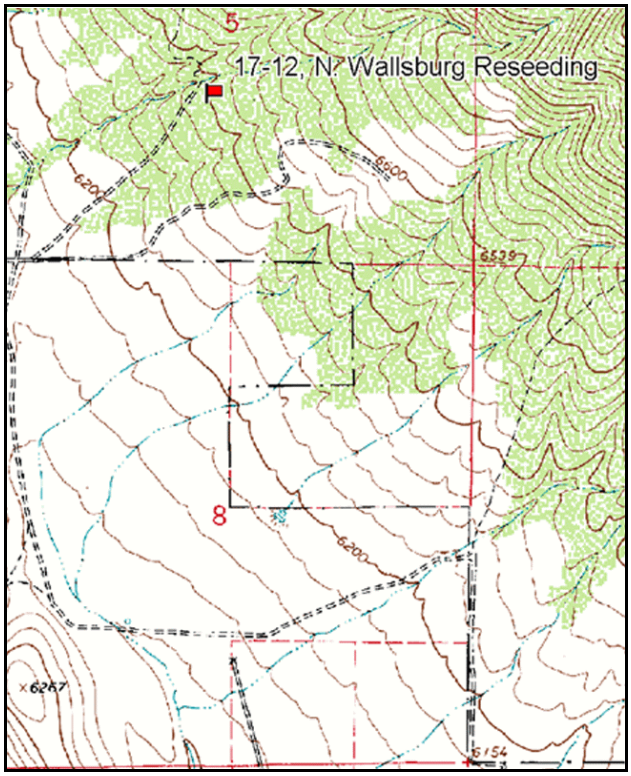
Study site name: North Wallsburg Reseeding . Vegetation type: Mixed Oak - Sage .

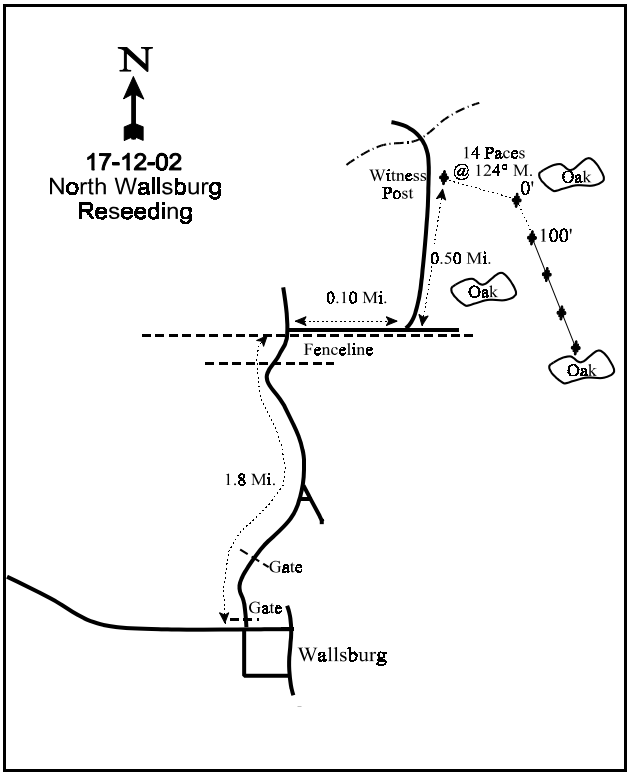
Compass bearing: frequency baseline 172 degrees magnetic.

Frequency belt placement: line 1 (11 & 95ft), line 2 (34ft), line 3 (59ft), line 4 (71ft).

LOCATION DESCRIPTION

From the town of Wallsburg, take the road which runs northerly for 1.8 miles, staying on the main road until coming to a gate. Proceed through the gate and turn east immediately after passing through the gate. Proceed east traveling along the fenceline for 0.10 miles to another intersection. Turn left at the intersection and proceed north for 0.50 miles to a green steel "T" fencepost on the right (i.e., east) side of the road. From the fencepost the 0-foot baseline stake is 18 paces away at an azimuth of 159 degrees true. A red browse tag, number 3953, is attached to the 0-foot baseline stake.





Map Name: Charleston

Diagrammatic Sketch

Township 5S , Range 5E , Section 5

GPS: NAD 27, UTM 12S 4473393 N 465514 E

DISCUSSION

North Wallsburg Seeding - Trend Study No. 17-12

This study is located on deer and elk winter range northeast of Wallsburg. The study is within the boundaries of the 1976 burn between Main Canyon and Daniels Canyon. The site is on a 10-15% southwest facing slope at an elevation of approximately 6,500 feet. Although burned and subsequently seeded in 1976, the intensity and scope of the fire on this site was not as severe as on the major part of the burned area lying to the west. The fire was more patchy in appearance with many of the mature shrubs from the original mixed oak-sage community surviving the burn. Except for the presence of seeded grasses and forbs, the area is vegetatively similar to adjacent, unburned oak-sagebrush communities. The area is an important winter concentration area for deer and elk as many deer pellet groups are present as well as a smaller numbers of elk pellets. Pellet group transect data collected in 2002 estimated 69 deer days use/acre (170 ddu/ha) and 10 elk days use/acre (25 edu/ha).

Textural and chemical analysis indicates the soil is a clay loam with a neutral reactivity (pH of 7.1). The average soil temperature is 46°F at a depth of 15 inches. The soil is moderately deep with many rocks and gravel on the surface and throughout the profile. Rocks are limestone with white deposits of calcium carbonate on their surface. Litter and vegetation cover are abundant and well disbursed over the site limiting erosion. Vegetation cover was estimated at 35% in 1996 and 33% in 2002. The majority fo the cover being contributed by grasses. Litter cover was estimated at 40% in 1996, increasing to 58% in 2002. Rock and pavement cover were estimated at 16% in 1989 and 1996, decreasing to 9% in 2002. It appears that the increase in bare soil in 2002 (20%) corresponds with a decline in rock and pavement cover. An erosion condition class assessment done in 2002 gave soils a stable rating.

The density of mountain big sagebrush was much lower in 1996 and 2002 (about 300 plants/acre) compared to the initial estimate of 1,433 plants/acre in 1983. Due to the low number of dead in the population, the difference in density is due to the greatly increased sample size giving a more accurate estimate in 1996 and 2002. Age structure has shifted from mostly young plants in 1983 and 1989, to a mostly mature population reported in 1996 and 2002. Recruitment from young plants was moderate in 1996 at 18%, but no young were sampled in 2002. A combination of drought and the increasing perennial grass component may explain the reason for the loss of the young age class. Decadence has been low in all years, currently (‘02) at 13%. Vigor was normal throughout the population although use was moderate to heavy in 1996 and 2002. Leader growth on mountain big sagebrush averaged 2 inches in 2002. Bitterbrush had an estimated density of about 100 plants/acre on the site in 1996 and 2002. Mature plants make up the entire population and use was moderate to heavy in 1996 and 2002. Leader growth on bitterbrush plants averaged 2.2 inches in 2002.

The populations of stickyleaf low rabbitbrush and broom snakeweed appeared to be dense in the 1983 and 1989 readings. However, densities are much lower in 1996 and 2002 for both species. As with mountain big sagebrush, the greatly increased sample size used in 1996 and 2002 gives better estimates of shrub populations due to the clumped and/or discontinuous nature of their distributions. Both have largely mature populations and good vigor. The dense grass cover may be competing with these low growing shrubs, thereby suppressing growth and recruitment. Drought in 2002 is also likely playing a role in the decline of the snakeweed population. Most of the browse cover on the site is contributed by Gambel oak. Photograph comparisons between years reveal the oak are becoming more dense on the site. Oak clones are mostly 5-8 feet tall with smaller plants found around the edges of the taller clones. These smaller plants exhibited moderate hedging in 1989 and 1996, although use was light throughout the population in 2002. Poor vigor increased from 0% in 1996 to 30% in 2002 due to an apparent spring frost. Density increased from 2,840 stems/acre in 1996 to 4,400 stems/acre in 2002.

Perennial grasses are the dominant component of the community. Sheep fescue is the most abundant species in cover and frequency in 1996 and 2002, with intermediate wheatgrass being a close second. Crested wheatgrass and bulbous bluegrass are also fairly abundant. In 2002, many of the fescue plants had a wolfy appearance with a lot of dead thatch intermixed with the current years growth. The most abundant grasses either increased in nested frequency or remained relatively stable in 2002. Sum of nested frequency for perennial grasses has stayed nearly the same from 1989-2002. Cheatgrass is not very common and is held in check by the abundance of the perennials in the understory. As reported in 1989, forbs remain insignificant. Alfalfa was seeded following the burn, but is not very abundant. Forbs, both annual and perennial species, declined in sum of nested frequency in 2002 with the drought conditions.

1983 APPARENT TREND ASSESSMENT

Soil trend appears to be slowly improving. Some sheet and gully erosion will continue but should moderate with the passage of time. Vegetative trend is more debatable. Gambel oak is not encroaching into interspaces to any great degree. However, the resprouting clones are becoming more dense and growing taller. Oak requires heavy use to keep it within reach, especially where no competitive grass understory is directly associated with it. As far as forage productivity is concerned, oak is currently at an optimum level. In the oak interspaces, shrub density of broom snakeweed, stickyleaf low rabbitbrush, and mountain big sagebrush appears to be increasing. The antelope bitterbrush population appears stable. The former two species are aggressive increasers that should be curtailed, while bitterbrush and big sagebrush should be encouraged. Forb cover and density, especially that of alfalfa, should at least be maintained.

1989 TREND ASSESSMENT

The soil trend is stable. Grasses continue to increase on the old burn with ground cover characteristics remaining close to 1983 estimates. There is slight erosion in the open areas, but as long as sufficient litter remains after grazing, it should not be a management concern. Trend for browse is stable. Big sagebrush shows a decline in density, but vigor remains normal and there are many young plants. The main concern for the browse component is the increase in the density of stickyleaf low rabbitbrush and broom snakeweed. Trend for the herbaceous understory is up as perennial grasses continue to increase in abundance.

TREND ASSESSMENT
soil - stable (3)
browse - stable (3)
herbaceous understory - up (5)

1996 TREND ASSESSMENT

Soil trend is stable as adequate vegetation and litter cover limit erosion. Browse trend is also stable. The mountain big sagebrush population is vigorous and the stickyleaf low rabbitbrush and broom snakeweed populations appear to be stable. The decline in density is mostly due to the much larger sample used in 1996which gives a more accurate estimate of shrub populations. Hedging appears to be heaviest on the surrounding true mountain mahogany. The herbaceous understory is dominated by perennial grasses that compete well with annual species. Sum of nested frequency remained nearly identical to 1989 levels resulting in a stable trend.

TREND ASSESSMENT
soil - stable (3)
browse - stable (3)
herbaceous understory - stable (3)

2002 TREND ASSESSMENT

Soil trend is stable. Although bare soil increased from 12% to 20%, litter cover also increased to 58%. The ratio of protective cover to bare soil remains good. Trend for browse is stable. Mountain big sagebrush has a stable density, normal vigor, and low decadency. Although no young plants were sampled in 2002, better precipitation should improve reproduction in the future. The increasers stickyleaf low rabbitbrush and broom snakeweed both decreased in density in 2002. They do not appear to be a threat to dominate the site as was the concern in 1983 and 1989. Gambel oak density increased, but does not appear to be negatively impacting other species at the present time. Trend for the herbaceous understory is stable. Sum of nested frequency for perennial species remained similar to 1996 levels. Perennial grasses remain the most dominant component of the vegetative community.

TREND ASSESSMENT
soil - stable (3)
browse - stable (3)
herbaceous understory - stable (3)

HERBACEOUS TRENDS --
Herd unit 17 , Study no: 12

Type	Species	Nested Frequency				Quadrat Frequency				Average Cover %	
		'83	'89	'96	'02	'83	'89	'96	'02	'96	'02
G	Agropyron cristatum	a90	b148	a66	a56	42	56	26	23	2.41	1.25
G	Agropyron intermedium	a117	b192	a135	ab157	49	73	49	58	3.32	5.92
G	Bromus tectorum (a)	-	-	b16	a7	-	-	6	2	.10	.53
G	Dactylis glomerata	8	7	-	-	4	2	-	-	-	.00
G	Festuca ovina	a42	b96	c190	c171	22	42	68	69	14.72	8.35
G	Oryzopsis hymenoides	2	7	-	4	1	4	-	2	-	.18
G	Poa bulbosa	a-	a-	b32	c92	-	-	12	36	.62	2.79
G	Poa fendleriana	-	8	-	-	-	3	-	-	-	-
G	Poa pratensis	27	8	26	8	10	5	9	3	.41	.04
G	Poa secunda	a-	a3	b24	a7	-	2	11	3	.08	.06
G	Sitanion hystrix	-	6	1	1	-	4	1	1	.00	.00
G	Stipa comata	-	-	-	2	-	-	-	1	-	.03
Total for Annual Grasses		0	0	16	7	0	0	6	2	0.10	0.53
Total for Perennial Grasses		286	475	474	498	128	191	176	196	21.57	18.66
Total for Grasses		286	475	490	505	128	191	182	198	21.67	19.19
F	Agoseris glauca	-	-	2	1	-	-	1	1	.00	.00
F	Alyssum alyssoides (a)	-	-	b134	a22	-	-	42	11	.36	.08
F	Allium spp.	-	2	-	2	-	1	-	1	-	.00
F	Astragalus spp.	a-	ab2	ab1	b9	-	1	1	5	.03	.05
F	Astragalus utahensis	3	1	10	10	1	1	3	5	.33	.07
F	Calochortus nuttallii	5	-	-	2	2	-	-	1	-	.00
F	Chaenactis douglasii	-	2	3	-	-	2	1	-	.03	-
F	Cirsium spp.	2	-	6	-	1	-	3	-	.26	-

Type	Species	Nested Frequency				Quadrat Frequency				Average Cover %	
		'83	'89	'96	'02	'83	'89	'96	'02	'96	'02
F	Collomia linearis (a)	-	-	-	5	-	-	-	2	-	.01
F	Comandra pallida	-	-	-	3	-	-	-	1	-	.00
F	Descurainia pinnata (a)	-	-	-	4	-	-	-	2	-	.01
F	Epilobium brachycarpum (a)	-	-	3	-	-	-	1	-	.00	-
F	Erigeron spp.	-	-	1	-	-	-	1	-	.03	-
F	Eriogonum racemosum	$_{a}$-	$_{a}$-	$_{b}$7	$_{ab}$3	-	-	5	3	.05	.04
F	Grindelia squarrosa	-	-	3	5	-	-	2	3	.06	.01
F	Lactuca serriola	8	-	-	-	3	-	-	-	-	-
F	Linum lewisii	-	-	3	1	-	-	1	1	.00	.03
F	Lithospermum ruderale	$_{a}$-	$_{a}$-	$_{a}$1	$_{b}$11	-	-	1	6	.15	.13
F	Medicago sativa	3	1	10	4	1	1	3	2	.33	.21
F	Orthocarpus spp. (a)	-	-	2	-	-	-	1	-	.00	-
F	Phlox longifolia	$_{a}$-	$_{a}$2	$_{b}$23	$_{ab}$11	-	1	12	6	.06	.03
F	Polygonum douglasii (a)	-	-	5	-	-	-	2	-	.01	-
F	Sphaeralcea coccinea	3	3	-	1	1	2	-	1	-	.00
F	Tragopogon dubius	$_{b}$28	$_{a}$7	$_{a}$8	$_{a}$2	13	3	3	2	.01	.01
F	Viguiera multiflora	$_{b}$11	$_{ab}$7	$_{ab}$9	$_{a}$-	6	4	4	-	.19	-
F	Zigadenus paniculatus	2	-	-	-	1	-	-	-	-	-
Total for Annual Forbs		0	0	144	31	0	0	46	15	0.37	0.09
Total for Perennial Forbs		65	27	87	65	29	16	41	38	1.55	0.62
Total for Forbs		65	27	231	96	29	16	87	53	1.93	0.72

Values with different subscript letters are significantly different at alpha = 0.10

BROWSE TRENDS --
Herd unit 17 , Study no: 12

Type	Species	Strip Frequency		Average Cover %	
		'96	'02	'96	'02
B	Amelanchier alnifolia	0	2	-	.41
B	Artemisia tridentata vaseyana	12	11	1.62	3.91
B	Cercocarpus montanus	1	0	.03	-
B	Chrysothamnus viscidiflorus viscidiflorus	35	13	.72	.04
B	Gutierrezia sarothrae	21	4	.47	.03
B	Opuntia spp.	6	4	.03	-
B	Purshia tridentata	5	4	1.59	1.69
B	Quercus gambelii	26	25	5.13	6.09
B	Symphoricarpos oreophilus	1	0	.15	-
B	Tetradymia canescens	7	8	.06	.51
Total for Browse		114	71	9.81	12.69

CANOPY COVER -- LINE INTERCEPT
Herd unit 17 , Study no: 12

Species	Percent Cover	
	'96	'02
Amelanchier utahensis	-	.25
Artemisia tridentata vaseyana	-	4.58
Chrysothamnus viscidiflorus viscidiflorus	-	.25
Opuntia spp.	-	.020
Purshia tridentata	-	2.08
Quercus gambelii	3.8	11.25
Tetradymia canescens	-	.75

Key Browse Annual Leader Growth
Herd unit 17 , Study no: 12

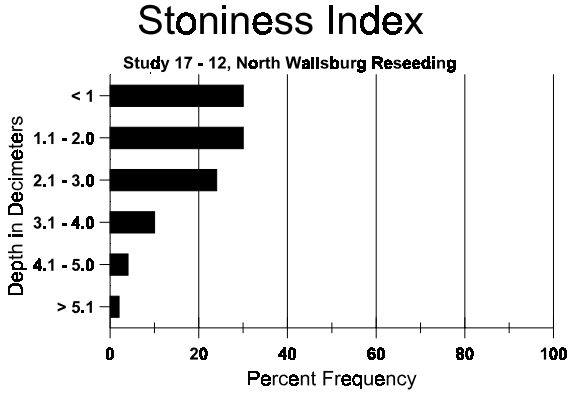
Species	Average leader growth (in)
	'02
Artemisia tridentata vaseyana	2.0
Purshia tridentata	2.2

BASIC COVER --
Herd unit 17 , Study no: 12

Cover Type	Nested Frequency		Average Cover %			
	'96	'02	'83	'89	'96	'02
Vegetation	344	317	1.50	4.25	35.09	33.00
Rock	216	150	5.75	5.50	6.78	5.06
Pavement	230	172	6.25	10.75	10.14	4.41
Litter	395	389	65.00	59.75	40.23	58.65
Cryptogams	48	5	1.50	.25	.81	.06
Bare Ground	206	196	20.00	19.50	12.07	20.63

SOIL ANALYSIS DATA --
Herd Unit 17, Study no: 12, North Wallsburg Reseeding

Effective rooting depth (in)	Temp °F (depth)	pH	%sand	%silt	%clay	%0M	PPM P	PPM K	dS/m
11.5	46.2 (14.8)	7.1	40.2	29.1	30.7	3.5	21.1	163.2	.7



PELLET GROUP FREQUENCY --
Herd unit 17 , Study no: 12

Type	Quadrat Frequency		Pellet Transect	
			Pellet Groups per Acre	Days Use per Acre (ha)
	'96	'02	'02	'02
Rabbit	8	-	-	-
Elk	5	5	131	10 (25)
Deer	27	24	896	69 (170)
Cattle	5	-	-	-

BROWSE CHARACTERISTICS --
Herd unit 17 , Study no: 12

AGE	YR	Form Class (No. of Plants)									Vigor Class				Plants Per Acre	Average (inches)		Total
		1	2	3	4	5	6	7	8	9	1	2	3	4		Ht.	Cr.	
Amelanchier alnifolia																		
M	83	-	-	-	-	-	-	-	-	-	-	-	-	-	0	-	-	0
	89	-	-	-	-	-	-	-	-	-	-	-	-	-	0	-	-	0
	96	-	-	-	-	-	-	-	-	-	-	-	-	-	0	-	-	0
	02	-	-	1	-	1	-	-	-	-	2	-	-	-	40	31	35	2

% Plants Showing	Moderate Use	Heavy Use	Poor Vigor	%Change
'83	00%	00%	00%	
'89	00%	00%	00%	
'96	00%	00%	00%	
'02	50%	50%	00%	

Total Plants/Acre (excluding Dead & Seedlings)				
	'83	0	Dec:	-
	'89	0		-
	'96	0		-
	'02	40		-

AGE	YR	Form Class (No. of Plants) 1	2	3	4	5	6	7	8	9	Vigor Class 1	2	3	4	Plants Per Acre	Average (inches) Ht.	Cr.	Total
Artemisia tridentata vaseyana																		
Y	83	36	-	-	-	-	-	-	-	-	33	3	-	-	1200			36
	89	10	7	-	2	-	-	-	-	-	19	-	-	-	633			19
	96	3	-	-	-	-	-	-	-	-	3	-	-	-	60			3
	02	-	-	-	-	-	-	-	-	-	-	-	-	-	0			0
M	83	7	-	-	-	-	-	-	-	-	5	2	-	-	233	26	30	7
	89	2	3	-	-	-	-	-	-	-	5	-	-	-	166	28	36	5
	96	4	8	1	-	-	-	-	-	-	13	-	-	-	260	28	47	13
	02	-	7	7	-	-	-	-	-	-	14	-	-	-	280	27	40	14
D	83	-	-	-	-	-	-	-	-	-	-	-	-	-	0			0
	89	3	1	-	-	-	-	-	-	-	3	-	-	1	133			4
	96	-	1	-	-	-	-	-	-	-	1	-	-	-	20			1
	02	-	-	2	-	-	-	-	-	-	2	-	-	-	40			2
X	83	-	-	-	-	-	-	-	-	-	-	-	-	-	0			0
	89	-	-	-	-	-	-	-	-	-	-	-	-	-	0			0
	96	-	-	-	-	-	-	-	-	-	-	-	-	-	40			2
	02	-	-	-	-	-	-	-	-	-	-	-	-	-	40			2

% Plants Showing	Moderate Use	Heavy Use	Poor Vigor	%Change
'83	00%	00%	00%	-35%
'89	39%	00%	04%	-64%
'96	53%	06%	00%	- 6%
'02	44%	56%	00%	

Total Plants/Acre (excluding Dead & Seedlings)				
'83	1433	Dec:		0%
'89	932			14%
'96	340			6%
'02	320			13%

Cercocarpus montanus																		
M	83	-	-	-	-	-	-	-	-	-	-	-	-	-	0	-	-	0
	89	-	-	-	-	-	-	-	-	-	-	-	-	-	0	-	-	0
	96	-	-	-	-	-	1	-	-	-	1	-	-	-	20	32	38	1
	02	-	-	-	-	-	-	-	-	-	-	-	-	-	0	27	35	0

% Plants Showing	Moderate Use	Heavy Use	Poor Vigor	%Change
'83	00%	00%	00%	
'89	00%	00%	00%	
'96	00%	100%	00%	
'02	00%	00%	00%	

Total Plants/Acre (excluding Dead & Seedlings)			
'83	0	Dec:	-
'89	0		-
'96	20		-
'02	0		-

AGE	YR	Form Class (No. of Plants) 1	2	3	4	5	6	7	8	9	Vigor Class 1	2	3	4	Plants Per Acre	Average (inches) Ht.	Cr.	Total
Chrysothamnus viscidiflorus viscidiflorus																		
S	83	-	-	-	-	-	-	-	-	-	-	-	-	-	0			0
	89	1	-	-	-	-	-	-	-	-	1	-	-	-	33			1
	96	3	-	-	-	-	-	-	-	-	3	-	-	-	60			3
	02	-	-	-	-	-	-	-	-	-	-	-	-	-	0			0
Y	83	13	-	-	-	-	-	-	-	-	13	-	-	-	433			13
	89	6	-	-	1	-	-	-	-	-	7	-	-	-	233			7
	96	10	-	-	-	-	-	-	-	-	10	-	-	-	200			10
	02	1	-	-	-	-	-	-	-	-	1	-	-	-	20			1
M	83	147	-	-	-	-	-	-	-	-	133	14	-	-	4900	8	7	147
	89	205	-	-	3	-	-	-	-	-	173	-	35	-	6933	10	13	208
	96	49	-	-	2	-	-	-	-	-	51	-	-	-	1020	11	20	51
	02	22	-	-	-	-	-	-	-	-	22	-	-	-	440	7	13	22
D	83	-	-	-	-	-	-	-	-	-	-	-	-	-	0			0
	89	18	-	-	-	-	-	-	-	-	12	-	6	-	600			18
	96	1	-	-	3	-	-	-	-	-	3	-	-	1	80			4
	02	1	-	-	-	-	-	-	-	-	-	-	-	1	20			1
X	83	-	-	-	-	-	-	-	-	-	-	-	-	-	0			0
	89	-	-	-	-	-	-	-	-	-	-	-	-	-	0			0
	96	-	-	-	-	-	-	-	-	-	-	-	-	-	60			3
	02	-	-	-	-	-	-	-	-	-	-	-	-	-	20			1

% Plants Showing	Moderate Use	Heavy Use	Poor Vigor	%Change
'83	00%	00%	00%	+31%
'89	00%	00%	18%	-83%
'96	00%	00%	02%	-63%
'02	00%	00%	04%	

Total Plants/Acre (excluding Dead & Seedlings)				
	'83	5333	Dec:	0%
	'89	7766		8%
	'96	1300		6%
	'02	480		4%

AGE	YR	Form Class (No. of Plants) 1	2	3	4	5	6	7	8	9	Vigor Class 1	2	3	4	Plants Per Acre	Average (inches) Ht.	Cr.	Total
Gutierrezia sarothrae																		
S	83	-	-	-	-	-	-	-	-	-	-	-	-	-	0			0
	89	-	-	-	-	-	-	-	-	-	-	-	-	-	0			0
	96	1	-	-	-	-	-	-	-	-	1	-	-	-	20			1
	02	-	-	-	-	-	-	-	-	-	-	-	-	-	0			0
Y	83	25	-	-	-	-	-	-	-	-	2	23	-	-	833			25
	89	3	-	-	-	-	-	-	-	-	3	-	-	-	100			3
	96	14	-	-	-	-	-	-	-	-	14	-	-	-	280			14
	02	-	-	-	-	-	-	-	-	-	-	-	-	-	0			0
M	83	123	-	-	-	-	-	-	-	-	54	69	-	-	4100	8	9	123
	89	219	-	-	-	-	-	-	-	-	188	-	31	-	7300	9	9	219
	96	28	-	-	-	-	-	-	-	-	28	-	-	-	560	8	10	28
	02	5	-	-	-	-	-	-	-	-	5	-	-	-	100	7	9	5
D	83	-	-	-	-	-	-	-	-	-	-	-	-	-	0			0
	89	4	-	-	-	-	-	-	-	-	1	-	3	-	133			4
	96	-	-	-	-	-	-	-	-	-	-	-	-	-	0			0
	02	1	-	-	-	-	-	-	-	-	1	-	-	-	20			1

% Plants Showing	Moderate Use	Heavy Use	Poor Vigor	%Change
'83	00%	00%	00%	+35%
'89	00%	00%	15%	-89%
'96	00%	00%	00%	-86%
'02	00%	00%	00%	

Total Plants/Acre (excluding Dead & Seedlings)				
	'83	4933	Dec:	0%
	'89	7533		2%
	'96	840		0%
	'02	120		17%

Opuntia spp.																		
M	83	8	-	-	-	-	-	-	-	-	8	-	-	-	266	6	8	8
	89	6	-	-	-	-	-	-	-	-	4	-	2	-	200	6	18	6
	96	7	-	-	-	-	1	-	-	-	8	-	-	-	160	5	23	8
	02	4	-	-	-	-	-	-	-	-	4	-	-	-	80	5	8	4

% Plants Showing	Moderate Use	Heavy Use	Poor Vigor	%Change
'83	00%	00%	00%	-25%
'89	00%	00%	33%	-20%
'96	00%	13%	00%	-50%
'02	00%	00%	00%	

Total Plants/Acre (excluding Dead & Seedlings)				
	'83	266	Dec:	-
	'89	200		-
	'96	160		-
	'02	80		-

AGE	YR	Form Class (No. of Plants) 1	2	3	4	5	6	7	8	9	Vigor Class 1	2	3	4	Plants Per Acre	Average (inches) Ht.	Cr.	Total
Purshia tridentata																		
M	83	-	-	-	-	-	-	-	-	-	-	-	-	-	0	-	-	0
	89	-	-	-	-	-	-	-	-	-	-	-	-	-	0	-	-	0
	96	3	2	-	-	-	-	-	-	-	5	-	-	-	100	31	78	5
	02	2	-	2	-	-	-	-	-	-	4	-	-	-	80	36	77	4

% Plants Showing	Moderate Use	Heavy Use	Poor Vigor	%Change
'83	00%	00%	00%	
'89	00%	00%	00%	
'96	40%	00%	00%	-20%
'02	00%	50%	00%	

Total Plants/Acre (excluding Dead & Seedlings)			Dec:	
	'83	0		-
	'89	0		-
	'96	100		-
	'02	80		-

AGE	YR	Form Class (No. of Plants) 1	2	3	4	5	6	7	8	9	Vigor Class 1	2	3	4	Plants Per Acre	Average (inches) Ht.	Cr.	Total
Quercus gambelii																		
S	83	-	-	-	-	-	-	-	-	-	-	-	-	-	0			0
	89	-	-	-	4	-	-	-	-	-	4	-	-	-	133			4
	96	12	-	-	-	-	-	-	-	-	9	1	2	-	240			12
	02	-	-	-	-	-	-	-	-	-	-	-	-	-	0			0
Y	83	-	-	-	-	-	-	-	-	-	-	-	-	-	0			0
	89	-	-	2	-	11	-	-	-	-	13	-	-	-	433			13
	96	12	13	-	3	-	-	-	-	-	9	19	-	-	560			28
	02	32	-	-	24	-	-	-	-	-	56	-	-	-	1160			58
M	83	20	-	-	-	-	-	-	-	-	20	-	-	-	666	53	34	20
	89	-	6	-	-	8	-	-	-	-	14	-	-	-	466	89	37	14
	96	18	55	-	-	-	-	32	-	-	63	42	-	-	2100	50	32	105
	02	149	-	-	-	-	-	-	8	-	95	-	62	-	3140	47	26	157
D	83	-	-	-	-	-	-	-	-	-	-	-	-	-	0			0
	89	-	-	-	-	-	-	-	-	-	-	-	-	-	0			0
	96	-	4	5	-	-	-	-	-	-	-	8	1	-	180			9
	02	5	-	-	-	-	-	-	-	-	-	-	-	5	100			5
X	83	-	-	-	-	-	-	-	-	-	-	-	-	-	0			0
	89	-	-	-	-	-	-	-	-	-	-	-	-	-	0			0
	96	-	-	-	-	-	-	-	-	-	-	-	-	-	240			12
	02	-	-	-	-	-	-	-	-	-	-	-	-	-	440			22

% Plants Showing	Moderate Use	Heavy Use	Poor Vigor	%Change
'83	00%	00%	00%	+26%
'89	93%	07%	00%	+68%
'96	51%	04%	.70%	+35%
'02	00%	00%	30%	

Total Plants/Acre (excluding Dead & Seedlings)			Dec:	
	'83	666		0%
	'89	899		0%
	'96	2840		6%
	'02	4400		2%

AGE	YR	Form Class (No. of Plants) 1	2	3	4	5	6	7	8	9	Vigor Class 1	2	3	4	Plants Per Acre	Average (inches) Ht.	Cr.	Total
Symphoricarpos oreophilus																		
M	83	-	-	-	-	-	-	-	-	-	-	-	-	-	0	-	-	0
	89	-	-	-	-	-	-	-	-	-	-	-	-	-	0	-	-	0
	96	1	-	-	-	-	-	-	-	-	1	-	-	-	20	35	35	1
	02	-	-	-	-	-	-	-	-	-	-	-	-	-	0	24	48	0

% Plants Showing	Moderate Use	Heavy Use	Poor Vigor	%Change
'83	00%	00%	00%	
'89	00%	00%	00%	
'96	00%	00%	00%	
'02	00%	00%	00%	

Total Plants/Acre (excluding Dead & Seedlings)			Dec:	
	'83	0		-
	'89	0		-
	'96	20		-
	'02	0		-

Tetradymia canescens																		
Y	83	-	-	-	-	-	-	-	-	-	-	-	-	-	0			0
	89	-	-	-	-	-	-	-	-	-	-	-	-	-	0			0
	96	4	-	-	-	-	-	-	-	-	4	-	-	-	80			4
	02	5	-	-	-	-	-	-	-	-	5	-	-	-	100			5
M	83	-	-	-	-	-	-	-	-	-	-	-	-	-	0	-	-	0
	89	-	-	-	-	-	-	-	-	-	-	-	-	-	0	-	-	0
	96	16	-	-	-	-	-	-	-	-	16	-	-	-	320	9	15	16
	02	27	-	-	-	-	-	-	-	-	27	-	-	-	540	9	22	27

% Plants Showing	Moderate Use	Heavy Use	Poor Vigor	%Change
'83	00%	00%	00%	
'89	00%	00%	00%	
'96	00%	00%	00%	+38%
'02	00%	00%	00%	

Total Plants/Acre (excluding Dead & Seedlings)			Dec:	
	'83	0		-
	'89	0		-
	'96	400		-
	'02	640		-